PUBLIC PERCEPTION OF SHORELINE QUALITY IN AN ERA OF DEMOGRAPHIC REVERSAL: THE CASE OF NORTHERN NEW YORK

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ABSTRACT

This study examines the divergent perceptions of shoreline and water quality among residents of the Adirondack region by identifying major influences on public perceptions in twelve counties encompassing New York State's Adirondack Park. These influences fit into three groupings: personal background, community characteristics and government activities affecting shoreline quality maintenance. The relative effects of these influences are assessed through correlation and regression techniques and a multidimensional scaling method on a random sample of 713 property owners. Government activities, especially land use regulations, are shown to be a major influence, upon controlling for community and personal background of the residents, on perceived shoreline quality. The concluding discussion emphasizes perceptual differences associated with personal background—namely, permanent and seasonal resident status in the Adirondacks—and offers an explanation as to why seasonal residents are more willing than their permanent counterparts to accept the centralized regulatory land use planning of the Adirondack Park Agency.

INTRODUCTION

A large portion of the American public is relocating from urban to rural places in search of a better quality environment (Beale, 1975; Fuguitt and Zuiches, 1975). First among the amenities pursued by seasonal and permanent residents alike is water quality (Morans and Wellman, 1978). What defines water quality is a matter of scholarly concern because dramatic differences mark the experiences and frames of references of today's ex-urbanites (Swedner, 1960; Graber, 1974; Sokolow, 1977; Sofranko and

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Fliegel, 1980; Plock, 1980; Steahr, 1982). Additionally, understanding public preferences for environmental policy is important for policymakers as well as scholars interested in maintaining water quality. However, there has been a surprising lack of research not only on public perceptions of shoreline and water quality, but also public attitudes toward governmental activities for protecting water, especially land use regulations. This paper is a partial redress of this omission.

The primary focus of our analysis is on water and shoreland quality as perceived by landowners in the Adirondack Park region of New York State. Shoreline quality is an important element of water quality and water quality is integral to perceived quality of life. We explore, as well, the ties between shoreline quality and environmental policy, especially land use regulations, given different personal and community backgrounds and given varying levels of approval for local and regional governmental activities among the landowners surveyed.

Some researchers have analyzed individual attitudes toward environmental quality in lakeshore communities, while controlling for ecological conditions e.g. (Berins, 1972; Milbraith, 1975, 1977). Moran et al., (1976) pointed out that the way people evaluated water quality did not necessarily correspond to actual water quality control measures and found divergent evaluations and expectations of water quality between seasonal and permanent residents in Northern Michigan.

On the other hand, as the *Global 2000 Report to the President* (Council on Environmental Quality, 1980) makes evident, environmental quality and public regulatory policies are closely associated in the minds of most people (see also Sims and Baumann, 1974 and Andrews and Wait, 1978). This is true as well in the Adirondack Park region under investigation, especially regarding the controversy over restrictive environmental policy pertaining to land use (Bobrow et al., 1984; Dyballa and Hahn, 1981; Graham, 1978; Liroff and Davis, 1981; Zinser, 1980).

In this study we hypothesize that differences in residents' attitudes were due to three sets of influences: their personal background, i.e., socioeconomic status, including residency (permanent/seasonal status); their community background whether the town in which they owned land was growing or declining in population; and institutional environment—i.e., perceived effectiveness of public regulatory activities. We expected that public perception of water/shoreline quality would be correlated with positive evaluations of government performance and regulation of private land use in the Adirondack region. Before introducing our data, methods and empirical model, we offer a necessary overview of the field setting in northern New York.

THE ADIRONDACK SETTING

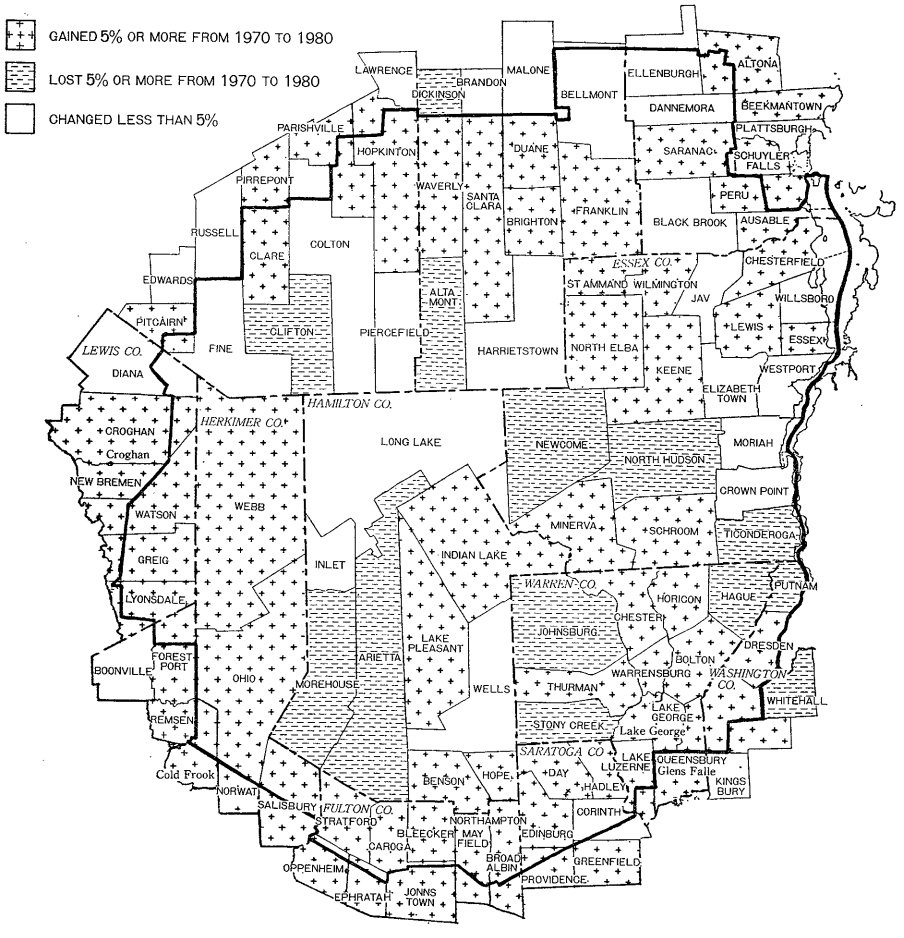
The New York State Adirondack Park, established in 1892, is located in northern New York State and is the largest park in the continental United States—approximately 6 million acres (9,262 square miles). It is three times the size of Yellowstone National Park. About 2.3 million acres (39 percent) of the park are owned by the State and almost all state lands are officially designated as "Forever Wild" within the state's Forest Preserve. The remaining 3.7 million acres (61 percent) are privately owned by individuals, corporations, universities, etc. The Park is delineated from the rest of northern New York by the "Blue Line," the dark boundary line on Map 1, in which parts of 12 counties and virtually all of the 92 towns are located. The centerpiece of the region is a uniform upland zone known as the Adirondack Mountains. It contains 46 peaks over 4,000 feet high, more than 2,300 lakes, and 30,000 miles of streams and rivers.

In 1885, the Adirondack Forest Preserve Act and the Adirondack Park Act were established, primarily to protect the forests as "Forever Wild," (Laws of New York, 1885, Chapter 283). The state had plans to buy all land within its boundaries—the so-called Blue Line (Keller, 1980). However, as the years passed, the impracticality of the state's purchasing all private land within the blue line was realized. According to the State Forest Commission's 1893 Report, 80.4 percent of total park land—2,807,760 acres—was owned by private interests and pressure to maintain large areas of the park for private recreational use was continuous since it was a major wilderness area with physical proximity to urban centers of the Northeast.

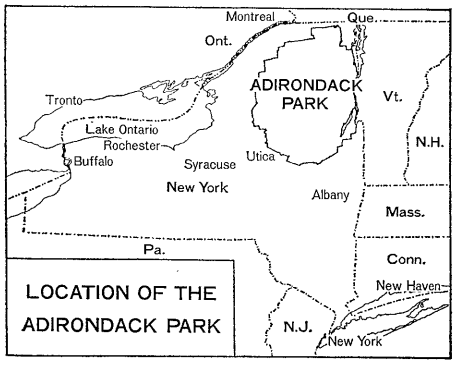
Until the 1960s the relationship between public and private interests in the park was relatively harmonious. However, in the early 1960s much of the wild area in the northeastern United States experienced second home and tourist development. After the completion of Interstate 87 connecting New York City, Albany and Montreal in the mid-1960s, land use demands in the park drastically changed. New leisure home and tourist development began growing. Uncontrolled growth pressured the conflict between private and public land use because of an obvious and serious lack of land use planning by Adirondack local government. Only 10 percent of the Adirondacks was under local land use regulation (Zinser, 1980).

In 1967 Lawrence Rockefeller, brother of the state's governor, recommended the creation of a 1.7 million acre Adirondack Mountain National Park. In 1968 Governor Nelson Rockefeller appointed a Temporary Study Commission on the future of the Adirondacks (TSC). The TSC, dominated by people who were not full-time residents of the Adirondacks and firmly in favor of preservation, recommended the creation of an

Map 1



This map contains towns that are inside as well as outside the blueline. Population gains and losses shown come from United States Census figures.



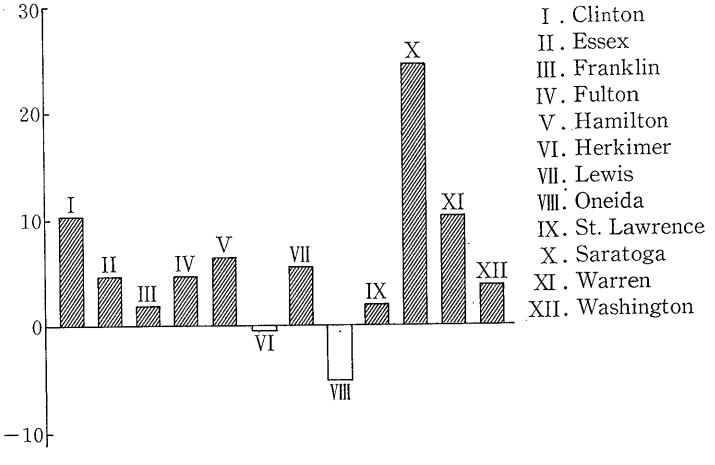
Adirondack Park Agency to have comprehensive planning and land use control power over private land as well as public land within the 6 million acres state park (TSC, 1971). This recommendation, coupled with strong support from the rest of the state, led to the governor's signing of the Adirondack Park Agency Act (1971), in spite of opposition by Adirondack area legislators. Today, the APA is governed by an 11-member commission appointed by the governor, a minority of whom must be park residents (Laws of New York, 1971, Chapter 706).

The population is sparsely distributed and there are no cities within the Adirondack region. Hamilton County, completely within the Park, has a density of under 6 persons per square mile. Permanent residents numbered nearly 196,000 in 1980, in contrast to the more than 200,000 nonpermanent (i.e., seasonal and absentee) owners. According to the 1980 U.S. Census[1], most counties in the region saw a substantial increase in their respective populations between 1970 and 1980 (Figure 1). Nearly 60 percent of all 92 towns in the Adirondacks grew over 10 percent and a surprising 7 percent (8 towns) grew by more than 50 percent during 1970–80. This occurred while the population for the State as a whole (heavily influenced by urban trends) decreased by about 4 percent during the same period.

As shown in Map 1, most of the Adirondack growth has occurred in towns which lie on the edge of the Adirondack Park and in towns which are on main roads and the shores of the resort lakes in the region.

Economically, the Adirondack region is a depressed region. The economy of the region is heavily oriented toward tourism, forestry, agriculture, mining and public services. The rate of unemployment in 92 towns within the park was 13.2 percent in 1980 and the average income level was the lowest in New York State. About fourteen

Figure 1. Rate of Population Change for the 12 Adirondack Counties: 1970–80



percent of total population are below the poverty level. Social well-being, e.g., community facilities and medical care, have traditionally been very poor (Taietz, 1973; Ross and others, 1979; Eberts, 1983).

Politically, the Adirondacks is perhaps best known as an arena of conflict between public and private property interests. The APA has implemented a centralized and restrictive regulatory approach with little citizen participation by Adirondack residents. This ability of the State to regulate private land gives the State considerable power over the 60 percent of the region not publically owned. If the state is to carry out its objectives, it is obligated to intervene in the planned use of private land holdings in the Adirondack region.

The State Land Use Plan was adopted in 1972 to protect public forests. It generated little controversy since it regulated only the 2.3 million acres of state land. On the other hand, the state's private Land Use and Development Plan (1973) was repudiated by many Adirondack landowners and their elected representatives (Graham, 1978), despite revisions resulting from 15 public hearings in 1973. Residents of Adirondack towns were originally excluded from development of the Adirondack Park private landuse plan and therefore developed a negative attitude toward the Adirondack Park Agency and planning generally (Bobrow, et al., 1984; 51). This opposition came about largely because of the economic hardship the plan was expected to exert on the already depressed region (Zinser, 1980). The Plan's principal aim was to minimize adverse environmental impact through regulations restricting private land use. Zinser (1980) notes that there has been more opposition to the way the APA administered the plan than to the plan itself. Recent studies have found continuing low support for the Plan by Adirondack residents (Liroff and Davis, 1981; Dyballa and Hahn, 1981).

In summary, the Adirondack region is a unique Park distinguished by the following aspects: (1) 62 percent of the park land is owned privately; (2) the Park consists of a uniform geography dominated by a strict wilderness code; (3) rapid population growth has occurred with a high proportion of seasonal residents travelling to the region in search of the excellent environmental amenities of the park—travel spurred by the construction of Interstate 87; (4) many communities in the region were and remain economically depressed; (5) the APA has implemented a centralized regulatory program for private land use planning without seeking approval from local residents in the face of local resistance to the plan.

Data and Methods

The primary source of information for this study is based on a structured questionnaire mailed to a random sample of 1215 Adirondack landowners in 1983. These owners

were selected by land parcels listed on the Assessment Role and Levy Module (ARLM) tapes compiled by the State of New York both within and adjacent to the Adirondack Park Blue Line (see Map 1).[2] In all, approximately 60 percent of the sampled owners returned usable questionnaires. These were divided into three parts: (1) Landowner profile and background; (2) Parcel description and use; and (3) Quality of life and public regulations in the Adirondacks.[3]

In order to measure landowner characteristics relevant to the hypotheses posed earlier, we isolated several variables of personal, community and institutional importance. Socioeconomic status included education and family income (1981) as well as permanent and nonpermanent (seasonal and absentee) status. Community characteristics, compiled at the town level for the 92 towns in the study region, entailed population growth/decline between 1970 and 1980, the proportion of seasonal housing stock, mobile home stock and employed persons in nonmanagerial jobs. Institutional environment was subjective in nature and included evaluations by landowners of both state and local policy domains. These were:

1) Shoreland regulation (Landowners were asked if they wished to see shoreland protection enforced in the areas of their holdings and allowed to answer "yes," "no," and "don't know.")
2) Shoreline quality (Owners were asked "Do you find the quality of the shoreline on lakes and streams around here pleasing and displeasing?" and provided a Likert scale for their response ranging from "very pleasing" to "very displeasing.")
3) Local Government Rating (Owners were asked "At the present time, is the job being done by local government pleasing or displeasing to you?" and given the same response categories as in #2, above.)
4) State Government Rating (Owners were asked an identical question with identical response possibilities except that "state" was substituted for "local" government.)
5) Plan Impact on Environment (Owners were asked, "In your opinion, what has been the [Adirondack Land Use and Development] Plan's impact on the environmental quality (land, water, forests, etc.) in the region?" and were asked to check "positive," "mixed," "no impact," "negative," or "unsure" on the questionnaire.

Residents' Backgrounds and Community Characteristics

The previous studies have indicated that new rural residents tend to be better educated, have higher incomes, and are more likely to be younger or past retirement age than long-time residents (Voss and Fuguitt, 1977; Campbell, Strangler, and Dailey,

1977). Other studies reveal that the same relationship exists between seasonal and permanent residents in general (Morans, et al., 1978) and in the Adirondacks (Gore and Lapping, 1974). Our research examines whether or not these hypotheses hold true for permanent and nonpermanent residents in the Adirondack region.

As shown in Figure 2, seasonal residents are likely to be more affluent than permanent residents. About half of the former earned more than $30,000 per year, whereas only 20 percent of the permanent residents earned this amount. Furthermore, nearly one quarter of the seasonal residents had an annual income over $50,000. Seasonal residents are also much better educated than permanent residents in the region (see Figure 3). Nearly one-quarter of the permanent residents have not completed high school, whereas this is true for only one-tenth of the seasonal residents. More than a quarter of the seasonal residents have pursued post college level studies, compared with 14 percent of the permanent residents. These differences in income and education level are reflected in the occupational structure of the two groups. Fifty-seven percent of the seasonal residents claimed to be white collar workers, compared with 27 percent of the permanent residents.

Another notable background influence on resident attitudes is age. Permanent residents are generally younger than seasonal residents. A larger percent (53.5) of the former are over retirement age (55 years). Twenty-nine percent of the permanent residents are less than 45 years old compared to 18.2 percent of the seasonal residents.

Figure 2. Income of Permanent and Nonpermanent Residents in 1981

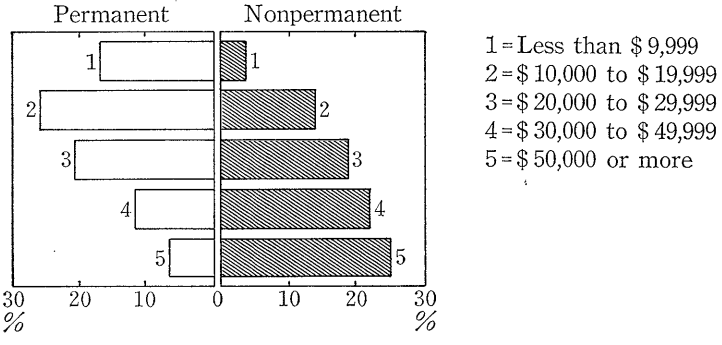
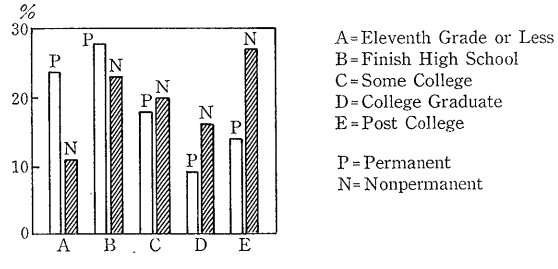


Figure 3. Education of Permanent and Nonpermanent Residents



The majority of both permanent and seasonal residents own parcels of land which are less than 1.5 acres in size. A permanent home is the predominant land use for permanent residents, while seasonal homes and recreational use characterize the seasonal residents' parcels. Interestingly, while more than 38 percent of seasonal residents claim that they own some forest land, only 18 percent of the permanent residents fit into the same category. Also more than 19 percent of the seasonal residents have a lake or pond on their parcel, compared with less than 8 percent of the permanent residents. This may be of some significance in helping to explain the positive attitude of the former group toward protection of shoreland—permanent residents, 48.5 percent; seasonal residents 66.5 percent. Permanent residents who strongly favor less land ownership by New York State outnumber seasonal residents who feel the same by two to one—30.1 percent to 15.3 percent.

Thus, it is evident that the permanent/seasonal distinction is one of the most significant subgroupings for analyzing residents' evaluations of environmental quality and public performance for maintaining quality of environment.

In addition to personal backgrounds, we are concerned with landowners' background differences in terms of town type. In order to explain the characteristics of growing and declining towns (see Map 1), we examined what community variables (Warren, 1963) from the 1980 U.S. Census were correlated with the population change during the 1970–80 period (Table 1). Here, we divide 92 towns of the Adirondack region by three groups which between 1970 and 1980 have a) more than a 5 percent population growth; b) more than a 5 percent decline in population; c) a "stable" population less than 5 percent in either direction.

Table 1. COMMUNITY CHARACTERISTICS OF GROWING AND DECLINING TOWNS: PEARSON'S CORRELATION COEFFICIENTS

The Rate of Population Change (1970–80)	
Percent of Total Population Aged 65 and over	—.247***
Percent of Total Workforce Unemployed	—.170***
Percent of Total Household Income $7,500/less	—.133***
Percent of Management/Professional Workforce	—.099***
Percent of Population With 1–3 yrs College	—.076*
Percent Mobile Homes in Occupied Housing	.416***
Percent Commuting 60+ Minutes to Work	.206***
Percent Households in Urbanized Areas	.190***
Percent of Craftsmen, Operators & Inspectors Employed in Total Workforce	.182**

Note: *** Significant at 0.01 probability level
** Significant at 0.05 probability level
* Significant at 0.10 probability level

Decline-town residents tended to have lower income and to be older than those in growth towns. This result is similar to what others observed between permanent and seasonal residents and between native residents and newcomers. However, in declining towns of the Adirondacks, the educational level is unexpectedly higher than in growing towns.

Also conforming to expectations, the percentage of unemployment is higher in declining towns than in growing towns. Interestingly, declining towns are more apt to have managers and professional workers in their occupational structure than are growing towns, whereas the latter have more working class people, i.e., craftsmen, machine operators, etc.

Growth towns are generally more densely populated than decline towns, and residents in the former are more likely to commute over 60 minutes to their place of employment. The percentage of mobile home units is positively correlated with the rate of population increase. This suggests that a large proportion of new residents currently tend to live in mobile home units.

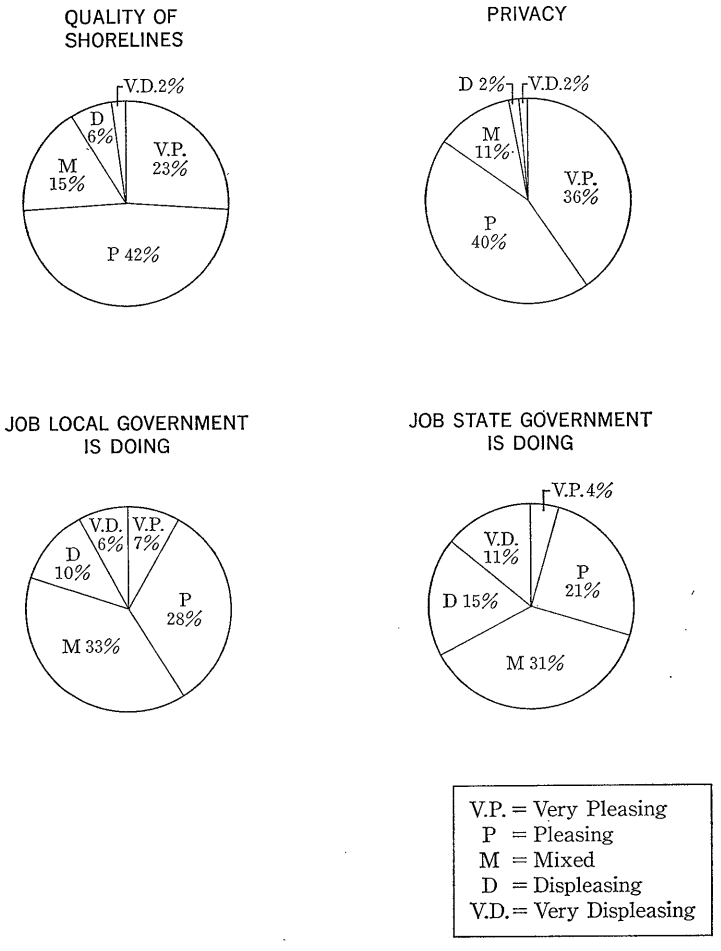
Residents' Evaluation of Environmental Quality

The shoreline of lakes and streams is one of the major environmental features which attracts residents to the Adirondack region. Sixty-five percent of all respondents said that the shoreline quality on lakes and streams is "pleasing" or "very pleasing" to them (Figure 4). One-third of the seasonal residents and nineteen percent of the permanent residents were very pleased with the quality of shoreline. Growth town residents were more pleased with the shoreline quality in their area than were decline town residents (83.2 percent vs 60.4 percent).

Privacy is valued by many people as an essential part of environmental quality. Over 75 percent of all respondents in our survey stated that they were either pleased or very pleased with the level of privacy in their home or on their property in the Adirondacks (Figure 4). While 49.4 percent of seasonal residents evaluated their quality of privacy very pleasingly, 36 percent of the permanent residents did so at the same level. Decline town residents were more inclined to be very pleased with the level of privacy available to them than were growth town residents (decline town residents 49.4 percent vs growth town residents 38.2 percent).

Another indicator of the environmental quality of life is the perceived level of public service by government officials. These responses about the physical environment do not diverge greatly from those pertaining to the job being done by local government. At least one in three landowners are pleased or very pleased with the present work of local government. Another third has mixed impressions about the performance of local

Figure 4. Quality of Life in Adirondack Region



government, and about 15 percent are displeased with the job local government is doing. Somewhat more people are displeased by the job that the state government is doing. More than a quarter, or 185 of the respondents, feel that the job state government is doing is displeasing or very displeasing. Another quarter are pleased and 30 percent say that they have mixed opinions (Figure 4).

Figure 5 indicate that seasonal residents were more likely than permanent residents to evaluate public service by both local and state governments as either very pleasing or pleasing. However, 36 percent of permanent residents are very displeased or displeased with the job being done by state government and 50.6 percent are displeased with the performance of local governments. There are no notable differences in evaluation of public service by local and state governments between growth and decline town

residents. In general, they are more likely to be pleased by public services provided by local government than with tasks performed by the state government.

Many Adirondack property holders own land in the region because they seek low density circumstances in which to live, either permanently or seasonally. Low density, like privacy, is a commonplace element of environmental quality. Residents' attitudes

Figure 5. Residents' Evaluation of Public Services

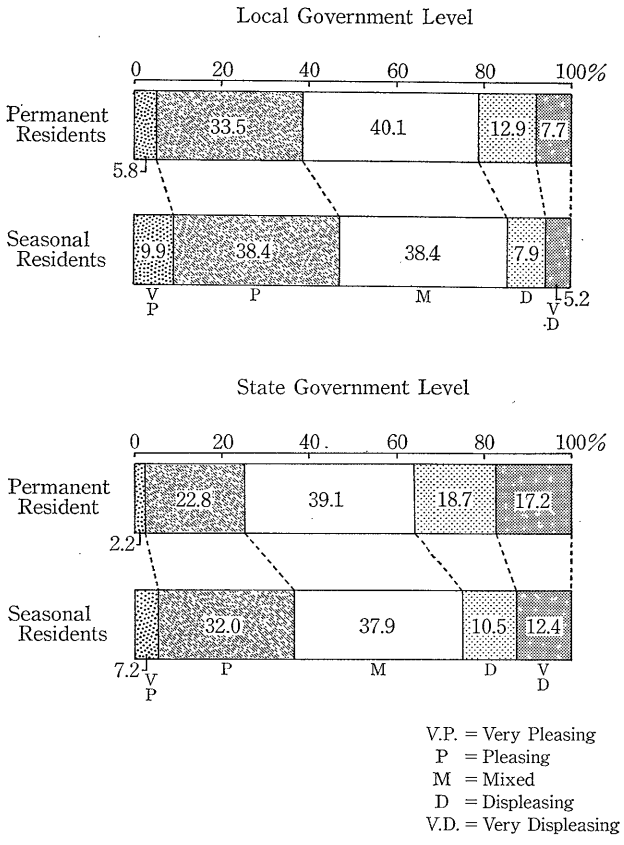
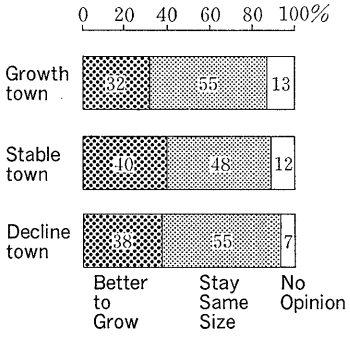


Figure 6. Preference of Population Growth



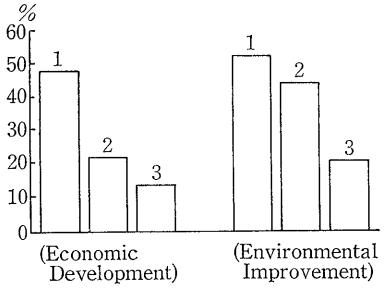
towards overcrowding are apt to be critical. Almost half of the respondents either agree or strongly agree with the statement, "Some people feel that overcrowding is spoiling many things that make the Adirondacks special."

Forty-one percent of permanent residents desire community growth, while only 23 percent of the seasonal residents do so. Growth town residents and decline town residents differ in their views on whether their communities should grow in population in the future. As shown in Figure 6, the former are somewhat more inclined to disagree with the notion of growth while the latter are more disposed to see the local areas grow in population. Also, about half of the growth town residents agree with the above statement, while less than a third of the decline town residents agree with that proposition.

Our research attempted to define quality of life as a blend of "jobs and environment" rather than the exclusion of one or the other. In general, the residents were more disposed toward environmental protection activities than to economic developmental ones. Thirty-eight percent (274) of our respondents stated that they support officials who favor economic development. This is in contrast with the 372 respondents (52 percent) who claim to support officials favoring environmental protection. Approximately 38 percent of the respondents seldom or never support officials favoring environmental protection.

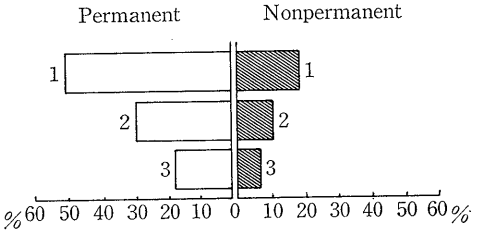
Another behavior relevant to quality of life is signing petitions favoring one economic or environmental position enhancement (Figure 7). Twenty-two percent of the respondents say that they often or regularly sign petitions favoring economic development. This is markedly less than the 239 respondents (34 percent) who say that they often or regularly sign petitions in favor of some form of environmental protection. More than 482 respondents, or two thirds, seldom or never sign petitions favoring economic development, whereas 56 percent seldom or never sign petitions in favor of environmental protection.

Figure 7. Activities on Economic and Environmental Issues



1=Support Public Officials
2=Sign Petition
3=Join Group

Figure 8. Participation in Economic Development Activities



1=Support Public Officials
2=Sign Petition
3=Join Group

Finally, 548 of the respondents, or more than three quarters, seldom or never join a group which has economic development in the region as one of its goals. Sixty eight percent (490 people) never or seldom join a group which has environmental protection on its agenda. (There may well be more opportunity to do the latter activity.) One hundred and one respondents do join groups supporting economic development whereas 152 (21 percent) join groups which favor environmental protection.

As shown in Figure 8, permanent residents are more active than seasonal residents in their support for economic development. More than a half of all permanent residents surveyed support public officials who maintain economic development on their agendas, while 11 percent sign petitions and 6.5 percent join groups in favor of economic development. Both permanent and seasonal residents show a similar intensity of activity in actions aimed at promoting environmental quality. Growth town residents are more equally divided when asked about either activity. Fifty-two percent support public officials who favor further environmental protection and 33 percent have signed a petition in favor of environmental protection on a regular basis. This compares, somewhat surprisingly, with 48 percent of decline town residents who support these public officials and 29 percent who often or regularly sign a petition in favor of environmental protection. Nor do people in each group differ noticeably in their inclination to join a group which supports enhanced environmental quality.

To summarize, all resident groups expressed high levels of satisfaction with environmental amenities of the Adirondacks. Major attractions for seasonal residents coming to the park are on the shoreline of lakes and rivers and the peace and quiet of the areas. Moreover, seasonal residents were more likely than permanent residents to be content with public policies any government level, although the latter were more apt to support public officials who maintain economic development. Finally, residents were more likely to support environmental protection than economic development.

Public Perception of Shoreline Quality: An Empirical Model

Our understanding of the relative influence of different background factors on perceived shoreland quality derived from a two-step process: (1) computation of zero-order correlations (Table 2) for the variables described earlier, and (2) the creation of a multiple regression model for identifying the significant predictors explaining public perceptions of shoreline quality in the Adirondack region. In this model, public perceptions of shoreline quality (SHORES) is predicted by the three sets of background (personal, community and institutional) already outlined. Also appearing in the model is a measure of water quality as perceived by landownwers in the study region. Table 2 features only those variables in each category which proved to be significantly

Table 2. ZERO-ORDER CORRELATION MATRIX OF VARIABLES IN MODEL OF SHORELINE QUALITY

Variables	Indicators	SHORES	SHOREP	LOCGOV	STCOV	PLANEQ2	RESIDE1	GRDSCH	INCOM81	POPCHG70	%SEASON	%CRAFTS	%TRAILER
Quality of Shorelines	SHORES Perception of shore quality	—											
Public Performance & the Plan	SHOREP[a] Shoreline regulation	.168 ***	—										
	LOCGOV Evaluation of public service (local level)	.371 ***	.114 **	—									
	STGOV Evaluation of public service (state level)	.285 ***	.063	.511 ***	—								
	PLANEQ2 Impact of plan on environmental quality	.212 ***	.033	.210 ***	.426 ***	—							
Personal Backgrounds	RESIDE1[b] Permanent/seasonal residents	.201 ***	.173 ***	.116 ***	.216 ***	.288 ***	—						
	GRDSCH Educational level	.177 ***	.209 ***	.133 ***	.097 **	.152 ***	.236 ***	—					
	INCOM81 1981 income	.228 ***	.126 **	.066	.092 *	.233 ***	.391 ***	.471 ***	—				
Community Characteristics	POPCHG70 Population change 1980/70	−.093 **	−.070	−.027	−.019	.008	.040	−.057	−.046	—			
	%SEASON % Seasonal housing	.082 **	.161 ***	.109 ***	.119 ***	.067 ***	.319	.051	.046	−.022	—		
	%CRAFTS % Craftsmen	−.116 ***	−.161 ***	−.161 ***	−.122	.024	.024	.158 ***	.178 ***	.181 ***	−.172 ***	—	
	%TRAILER % Mobile homes	−.120 ***	−.113 **	−.133 ***	−.103 **	−.120 **	−.062	−.152 ***	−.148 ***	.415 ***	−.237 ***	−.553 ***	—

Note: *** Significant at 0.01 probability level ** Significant at 0.05 probability level * Significant at 0.10 probability level
a 0=NO; 1=YES b 1=Permanent residents; 2=Seasonal residents

correlated with SHORES.

The influence of a range of residents' characteristics were examined at the zero-order level. These included sex, age, income, education, occupation, employment and size of landholding. Somewhat surprisingly, occupational status (blue versus white collar) and landownership were not significant variables in helping to explain differences in residents' perception of shoreline quality in the Adirondack region. On the other hand, income (INCOM81) and educational level (GRDSCH) were statistically significantly correlated with perceptions of shoreline quality. Very prominent was whether respondents were permanent or nonpermanent, a finding supported in previous studies (Moran, 1979).

Generalized community structure variables (gathered at the aggregate level for each of the 92 towns in question) were examined to determine whether or not they related to SHORES. Residents were divided into groups based on 1) the rate of total population change (1970–80) in their towns (POPCHG70), 2) the percentage of total workforce employed in their towns in precision production craft repair, operators, machine operators, inspectors (%CRAFTS), 3) the percentage of total occupied housing in their towns which are mobile homes (%TRAILER), and 4) the percentage of total housing in their community which is occupied by seasonal residents (%SEASON).

Thus divided, residents did not differ significantly in their perceptions of shoreline quality. No significant correlation between these community variables and SHORES are shown in Table 2. As Marans and Wellman (1978) have suggested, direct evaluation of water quality may be an important indicator of quality of water, especially as it is represented by drinking water, is not related to public perceptions of shoreline quality. Also, residents' evaluations of environmental quality is not directly related with "SHORES." Public opinion concerning overcrowding (CROWDS), is negatively correlated with opinions on shoreline quality ($r = -.111$). The respondent who agrees with the viewpoint—"Overcrowding is spoiling many things that make the Adirondacks special"—is inclined to be displeased with shoreline quality.

Among the independent variables groups representing the three aforementioned dimensions, satisfaction with government performance (LOCGOV, STGOV) are most strongly correlated with SHORES. Both the impact of the APA plan on environmental quality (PLANEQ2) and the existence of shoreline regulation (SHOREP) are positively correlated with SHORES as well. As expected, residents who are pleased with public performance by both local and state governments are also satisfied with shoreline quality.

Several regression models were subsequently employed. Three of these proved to be useful and are reported in Table 3. They provided an insight into the eleven inde-

Table 3. REGRESSION RESULTS FOR SHORELINE QUALITY MODELS

Dependent Variable: Residents' Perception of shoreline quality (SHORES) N=630

Independent Variables	Beta Coefficient Value		
	MODEL (1)	(2)	(3)
Evaluations of public service at local level (LOCGOV)	.226****	.214****	.236****
Evaluations of public service at state level (STGOV)	.213****	.207****	.216****
Total income in 1981 (INCOM81)	.174***	.149***	.194***
Existence of shoreline regulation (SHOREP)	.119**	.113**	.096*
Population change (1980/70) (POPCH70)	−.127**	−.094*	—
Impact of the Adirondack Park plan on environmental quality (PLANEQ2)	.121*	.101*	—
Percentage of craftsmen in communities (% CRAFTS)	−.119*	−.082*	—
Educational level (GRDSCH)	−.085	—	—
Percentage of seasonal housing in communities (% SEASON)	.037	—	—
Percentage of mobile home units in communities (% TRAILER)	.074	—	—
Permanent/seasonal residents (RESIDE1)	.031	—	—
R^2 (Adjusted R^2)	.247 (.195)	.242 (.211)	.191 (.172)

Note: — Not included in the model
* Significant at 0.20 probability level (two tailed T-test)
** Significant at 0.10 probability level (two tailed T-test)
*** Significant at 0.05 probability level (two tailed T-test)
**** Significant at 0.01 probability level (two tailed T-test)

pendent variables. Regression analysis is used because the effect of these eleven influences may be simultaneous and therefore require a technique showing net statistical influence of single variables. That is, multiple regression analysis was used to establish a more concise and controlled appraisal of the causal association in question. Table 3 shows the standardized regression (Beta) coefficient and the coefficient of multiple determination (R^2 and the adjusted R^2) for all three models.

In the first model, eleven independent variables yield the coefficient of determination (R^2) of .247. The influence of "educational level" (GRDSCH), "percentage of seasonal housing in communities" (%SEASON), "percentage of mobile home units in communities," (%TRAILER), and "permanent/seasonal residents" (RESIDE1) are *not* statistically significantly different from zero. The adjusted R^2 is only .195.

In the second stage of this analysis, a regression of seven variables was performed on SHORES and produced an adjusted R^2 of .211 (R^2=.242). Evaluation of public policies at the local and state levels (LOCGOV and STGOV) were the most substantial contributors to this coefficient. This result is most clearly demonstrated in third model in Table 3. Here, all four variables, except total income in 1981, are concerned with

government activities, i.e., residents' evaluations of government performance at the local and state level (shoreline regulation is both). LOCGOV and STGOV together account for nearly 16 percent of the total variance.

Shoreline Quality Difference between Permanent and Seasonal Residents

The preceeding regression analysis, while isolating the net effects of independent variables and ranking the several sets of background influence of interest to us, understates the importance of the personal background variable, RESIDE1. The variation in RESIDE1, being dichotomous, is reduced more as an artifact of coding procedure than as a matter of the variable's intrinsic importance to the analysis. This situation is easily remedied by employing multidimensional scaling analysis which gives spatial representation to relative influence of categorical variable subgroupings (Kuskal and Wish, 1978). Each point in the geometric configuration that results corresponds to a variable associated with the dependent variable, SHORES. In place of a coefficient of determination, we conclude with a pattern of perceptual structure among permanent landowners as contrasted with nonpermanent owners. Proximity or clustering among independent variables represents association among them for each ownership type.

Figure 9 exhibits the result of the multidimensional scaling performed. Five groups of variables entailing 26 separate influences that might differ according to permanent/nonpermanent status have been employed and are elaborated in Appendix I.

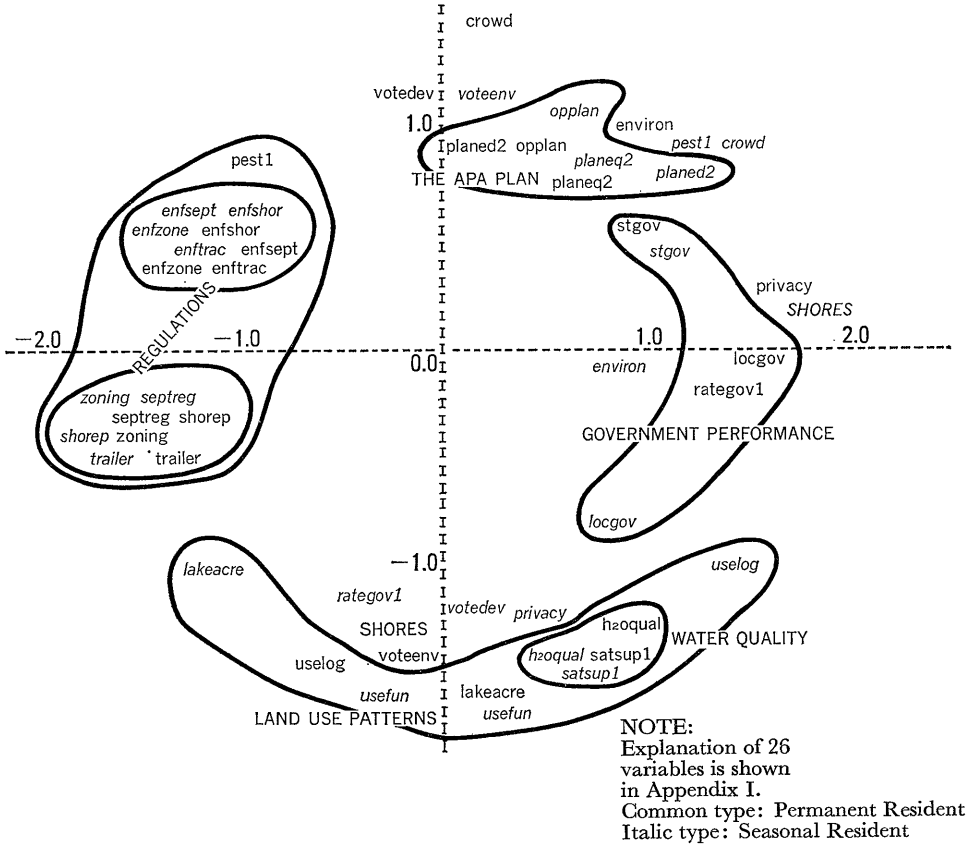
Extreme differences of shoreline quality between permanent and seasonal residents exists. Permanent residents perceived SHORES associated with physical environment, i.e. land use and drinking water as well as satisfaction of land use plan. On the other hand, seasonal residents perceived SHORES to be associated with the institutional environment. The configurations in Figure 9 suggest little if any difference in preference for regulation to protect environmental quality between resident types.

It would appear that there is some agreement on "how to maintain the environmental quality" between permanent and nonpermanent owners and that conflict about regulation is minimal. However, "who should maintain environmental quality" is not so clear. Among nonpermanent residents, the quality of environment is best maintained through government agency, namely the Adirondack Park Agency. For permanent residents, government regulation at any level is unwanted. This is not to say such landowners are unconcerned about environmental quality, but rather that they are skeptical about public sector controls to achieve this.

Conclusion

The preceeding analysis leads to several conclusions worthy of mention. Our initial

Figure 9. Public Perceptions of Shoreline Quality:
Difference between Permanent and Seasonal Residents



finding, while not new, warrants emphasis. It is that the appraisal of key elements in the quality of life in high amenity rural places—such as water and shoreland quality—may bear little relationship to objective conditions or measures. Stated slightly differently, social and institutional conditions color perceptions of quality at least as much as objective, physical referents.

Secondly, it was obvious in the course of our analysis that institutional factors more dramatically influenced SHORES than either personal or community factors. Local government performance was particularly salient as a factor in SHORES satisfaction, a finding somewhat incongruous with the fact that the study area is subject to an inordinately powerful regional planning agency. On the other hand, this regional authority is stronger in the area of land use controls than in water quality maintenance. Community level influences such as employment and population change exerted comparatively small influence on perceived shoreland quality.

Finally, among the individual background variables investigated, type of residence

demonstrated far-reaching influence on SHORES. Nonpermanent residents look to the Adirondack Park Agency for assistance in preserving environmental quality in general and shoreland/water quality in particular. This was evident in both the cross tabular and multidimensional scaling analysis results. Permanent landowners in the region are more cautious in evaluating SHORES and in crediting public agencies at either local or regional levels with advancing shoreland quality.

Policymakers for generations have managed and regulated natural resource endowments by focusing on the physical resource and largely ignoring public perceptions of the resource. This analysis shows such policy formation to be ill-advised. Not only is social context an independent force to be considered, but it is multi-layered and multidimensional. New York City's drinking water is acceptable not by all objective criteria but by the subjective assessments of its many users. Likewise, the water quality of the Adirondack region, where much New York City drinking water originates, is a subjective resource about which users with different backgrounds and appraisals of government programs will disagree.

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NOTES

1. U.S. Bureau of the Census, 1980 Census of Population; Volume 1, Characteristics of the Population (PC90-1-A34) New York, 1982.
2. The disadvantage of this parcel-based sampling approach was that it overrepresented multiple-parcel owners because multiple-parcel owners were given a higher probability of being sampled than single owners. Twenty-five of 1215 total sampled parcels in our survey were multipleparcel owners.
3. In 1973 and 1974, agricultural economists at Cornell University performed a similar study of landowners in the Adirondack region (Mapp and Craig, 1974).
4. Using the five-point Likert scale, we asked respondents to evaluate the shoreline quality, privacy and public performances by local and state levels, as the indicators of environmental quality of life in their areas.

APPENDIX I

Below appears 26 variables subjective to multidimensional scaling method within five categories.

1) Satisfaction and Supporting of Government Performance:
   i. Evaluation of public performance (LOCGOV, STGOV)
   ii. Supporting public economic development and environmental protection (VOTEDEV, VOTEENV)
   iii. Rating land use planning (RATEGOV1)
2) Existences and Preferences of Regulations
   i. Shoreline protection (SHOREP, ENFSHOR)
   ii. Septic tank regulations (SEPTREG, ENFSEPT)
   iii. Zoning (ZONING, ENFZONE)
   iv. Mobile home (TRAILER, ENFTRAC)
   v. Pesticide (PEST1)
3) Land Use Patterns
   i. Lake use (LAKEACRE)
   ii. Recreational use (USEFUN)
   iii. Logging (USELOG)
4) Evaluation of Environmental and Water Quality
   i. Environmental quality (ENVIRON)
   ii. Drinking water and its supply (H2OQUAL, SATSUP1)
   iii. Crowding (CROWD)
   iv. Privacy (PRIVACY)

5) Opinion of the APA Plan
   i. Approval of the plan (OPPLAN)
   ii. Impact of the plan on environment protection (PLANEQ2)
   iii. Impact of the plan on economic development (PLANED2)

Dependent variables: Perception of Shoreline Quality (SHORES)